

REMARKS

Claim 17 has been cancelled and claims 1 - 4, 8 and 14 - 16 have been amended. Claims 1 - 8 and 14 - 16 are pending in the present application.

IN RESPONSE TO THE OFFICE ACTION:

Priority:

Applicant appreciates notification that papers submitted under 35 U.S.C. 119(a) - (d), have been placed of record in the file.

Drawings Amendments:

First, replacement drawings, included herein, add the legend "Prior Art" to Figures 8A, 8B, 9A, 9B, 9C and 10, as suggested by the Examiner.

Second, the drawings are subject to objection under 37 C.F.R. 1.83(a) due to description of the "second reverse conduction type semiconductor region formed around the semiconductor layer." In this response, the claims have been cosmetically amended to clarify the location of "a second reverse-conduction type semiconductor region" as "forming a boundary in" the semiconductor layer (see, e.g., amended claim 1). Thus, it is most respectfully submitted that the drawing objections should be withdrawn. It is also respectfully noted that the present amendments to the claims, being cosmetic in nature, and not to avoid prior art nor needed to overcome rejections should have no affect on the broadest reach of the claims under the doctrine of equivalents.

Reconsideration and withdrawal of the objection is requested.

Product-by-Process Limitations:

Claims 2, 3 and 8 have been amended following review of comments, in the Office Action, concerning product-by-process claims.

Claims Objections:

The Office Action objected to claims 1 - 8 and 14 - 17 as to alleged informalities. In particular, claims 1, 15, and 17 recite a second reverse-conduction type semiconductor region formed around the semiconductor layer. This limitation was objected to on the basis that it was alleged to be inconsistent with figures (e.g. Figure 1A and 1B).

In this response, claim 17 has been cancelled. In addition, the amendments of claims 1, 15 and 16 clarify the location of "a second reverse-conduction type semiconductor region" as "forming a boundary in" the semiconductor layer. The claim limitation corresponds to illustration of the second reverse conduction type semiconductor region in the figures.

In the Office Action, the objection to claims 4, 14 and 16 related to language used for describing depletion layers. In this response, the amendment of claims 4, 14 and 16 includes changes recommended in the Office Action.

It is most respectfully submitted that the present amendments place claims 1 - 8 and 14 - 16 in condition for allowance. Early reconsideration and allowance are respectfully requested.

Claim Rejections - 35 USC §112:

Claim 4 stands rejected under 35 U.S.C. §112 as to alleged lack of antecedent basis for the limitation, "respective neighboring." In this regard, in this response, the recitation of the "plurality of first reverse-conduction type semiconductor regions" in amended claim 4 overcomes rejection under 35 U.S.C. §112.

Request is made for reconsideration and withdrawal of this rejection of claim 4.

Claims Rejections - 35 USC §102:

In Office Action, claims 1 - 8 and 14 - 17 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Sugita (EP 0 372 428 A1). These rejections are most respectfully traversed, as follows.

In this response, claims 1 and 14 have been amended to recite that the shape of each of the plurality of equidistant first reverse conduction type semiconductor regions to an orthohexagonal shape that differs from the P+ type areas taught by Sugita (see Figs. 7a and 7b).

In addition, claim 2 has been amended to recite "trenches having an orthohexagonal shape." This limitation is now also part of amended claim 16 that has been further amended to include the limitations of claim 17, which claim has been cancelled from the present application.

As shown in Fig. 1A and on page 16, lines 8 - 16 of the present application, P+ type semiconductor regions 3 have an orthohexagonal shape and are separated by equal intervals. For further clarification, this response includes Fig. (A), shown below, that help depict an illustrative arrangement of P+ type semiconductor regions 3 wherein each interval of separation (L) between regions 3 is about equal. On the other hand, Fig. (B), shown below, depicts a non-preferred arrangement wherein the intervals separating the P+ type semiconductor regions are not substantially equal.

Fig. (A)

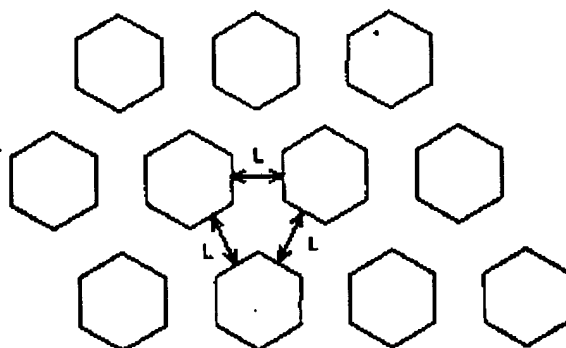
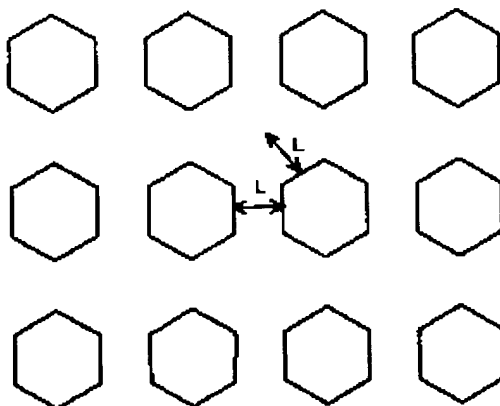


Fig. (B)



In view of the foregoing, it is most respectfully submitted that amended claims 1, 14 and 16 are allowable. Early reconsideration and withdrawal of the rejection under 35 U.S.C. §102(b) are respectfully requested. Withdrawal of rejection of claims 2 - 8 and 15 is also requested since claims 2 - 8 depend from claim 1 and claim 15 depends from claim 14. In addition, the dependent claims also recite additional non-suggested features. The dependent claims should, thus, also be allowable.


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In view of the above, it is most respectfully requested that the rejection of claims 1 - 8 and 14 - 16 be reconsidered and withdrawn and that the Examiner indicate the allowance of the claims in the next paper from the Office.

Concluding Remarks:

The undersigned representative requests any extension of time that may be deemed necessary to further the prosecution of this application. The undersigned representative authorizes the Commissioner to charge any additional fees under 37 C.F.R. 1.16 or 1.17 that may be required, or credit any overpayment, to Deposit Account No. 14-1437, referencing Order No. 00173.0027.PCUS00. In order to facilitate the resolution of any issues or questions presented by this paper, the Examiner should directly contact the undersigned by phone to further the discussion.

Respectfully submitted,



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AMENDMENTS TO THE DRAWINGS:

Please enter the replacement drawings included herewith to show the legend "Prior Art"
in Figures 8A, 8B, 9A, 9B, 9C and 10.